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!Keywords: Bundling / Economic / Equilibrium / Marketing / Matching / Product Management /
Sales / Sorting;
MAX    7 PBZZ + 7 PBSZ + 7 PBZW + 7 PBSW +
        5 PLZZ + 5 PLSZ + 5 PLZW + 5 PLSW +
        6 PEZZ + 6 PESZ + 6 PEZW + 6 PESW +
      4.5 PHZZ + 4.5 PHSZ + 4.5 PHZW + 4.5 PHSW
 SUBJECT TO
  ! Each customer buys exactly one bundle;
     2)   YBZZ + YBSZ + YBZW + YBSW =    1
     3)   YLZZ + YLSZ + YLZW + YLSW =    1
     4)   YEZZ + YESZ + YEZW + YESW =    1
     5)   YHZZ + YHSZ + YHZW + YHSW =    1
 ! Each customer's achieved surplus, S, must be at least
 !  as good as that possible from every bundle
     6)   XSZ + SB >=   450
     7)   XZW + SB >=   110
     8)   XSW + SB >=   530
     9)   XSZ + SL >=   75
    10)   XZW + SL >=   430
    11)   XSW + SL >=   480
    12)   XSZ + SE >=   290
    13)   XZW + SE >=   250
    14)   XSW + SE >=   410
    15)   XSZ + SH >=   220
    16)   XZW + SH >=   380
    17)   XSW + SH >=   390
 ! Compute the achieved surplus for each customer;
    18) - 450 YBSZ - 110 YBZW - 530 YBSW + PBZZ + PBSZ
      + PBZW + PBSW + SB =    0
    19) - 75 YLSZ - 430 YLZW - 480 YLSW + PLZZ + PLSZ
      + PLZW + PLSW + SL =    0
    20) - 290 YESZ - 250 YEZW - 410 YESW + PEZZ + PESZ
      + PEZW + PESW + SE =    0
    21) - 220 YHSZ - 380 YHZW - 390 YHSW + PHZZ + PHSZ
      + PHZW + PHSW + SH =    0
 ! Each product variable Pij must be..
 !   <= Xj
 !   <= Rij * Yij
 !   >= Xj - M + M * Yij
    22)   PBZZ <=   0   ! Empty bundle must have price = 0;
    23) - 600 YBZZ + PBZZ >= - 600
    24)   PBSZ - XSZ <=   0
    25) - 450 YBSZ + PBSZ <=   0
    26) - 600 YBSZ + PBSZ - XSZ >= - 600
    27)   PBZW - XZW <=   0
    28) - 110 YBZW + PBZW <=   0
    29) - 600 YBZW + PBZW - XZW >= - 600
    30)   PBSW - XSW <=   0
    31) - 530 YBSW + PBSW <=   0
    32) - 600 YBSW + PBSW - XSW >= - 600
    33)   PLZZ <=   0
    34) - 600 YLZZ + PLZZ >= - 600
    35)   PLSZ - XSZ <=   0
    36) - 75 YLSZ + PLSZ <=   0
    37) - 600 YLSZ + PLSZ - XSZ >= - 600
    38)   PLZW - XZW <=   0
    39) - 430 YLZW + PLZW <=   0
    40) - 600 YLZW + PLZW - XZW >= - 600
    41)   PLSW - XSW <=   0
    42) - 480 YLSW + PLSW <=   0
    43) - 600 YLSW + PLSW - XSW >= - 600
    44)   PEZZ <=   0
    45) - 600 YEZZ + PEZZ >= - 600
    46)   PESZ - XSZ <=   0
    47) - 290 YESZ + PESZ <=   0
    48) - 600 YESZ + PESZ - XSZ >= - 600
    49)   PEZW - XZW <=   0
    50) - 250 YEZW + PEZW <=   0
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   51) - 600 YEZW + PEZW - XZW >= - 600
   52)   PESW - XSW <=   0
   53) - 410 YESW + PESW <=   0
   54) - 600 YESW + PESW - XSW >= - 600
   55)   PHZZ <=   0
   56) - 600 YHZZ + PHZZ >= - 600
   57)   PHSZ - XSZ <=   0
   58) - 220 YHSZ + PHSZ <=   0
   59) - 600 YHSZ + PHSZ - XSZ >= - 600
   60)   PHZW - XZW <=   0
   61) - 380 YHZW + PHZW <=   0
   62) - 600 YHZW + PHZW - XZW >= - 600
   63)   PHSW - XSW <=   0
   64) - 390 YHSW + PHSW <=   0
   65) - 600 YHSW + PHSW - XSW >= - 600
  ! Price of bundle should be <= sum of component prices;
   66) - XSZ - XZW + XSW <=   0
  ! Price of bundle should be >= price of any component;
   67) - XSZ + XSW >=   0
   68) - XZW + XSW >=   0
 END
! Make the "pick a bundle" variables 0/1
 INTEGER      YBZZ
 INTEGER      YBSZ
 INTEGER      YBZW
 INTEGER      YBSW
 INTEGER      YLZZ
 INTEGER      YLSZ
 INTEGER      YLZW
 INTEGER      YLSW
 INTEGER      YEZZ
 INTEGER      YESZ
 INTEGER      YEZW
 INTEGER      YESW
 INTEGER      YHZZ
 INTEGER      YHSZ
 INTEGER      YHZW
 INTEGER      YHSW
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